



Complete sets of elastic constants and photoelastic coefficients of pure and MgO-doped lithium niobate crystals at room temperature

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Résumé en anglais	<p>This paper presents the results of ultrasonic measurements of LiNbO₃ and LiNbO₃:MgO crystals. The tensors of piezoelectric coefficients, elastic stiffness constants, and elastic compliances are determined for both crystals at room temperature. Combining these data with the results of piezo-optical measurements, a complete set of photoelastic tensor coefficients is also calculated. Doping of LiNbO₃ crystals by MgO does not lead to a considerable modification of their elastic and photoelastic properties. However, LiNbO₃:MgO is characterized by a considerably higher resistance with respect to powerful light radiation, making it promising for future application in acousto-optic devices that deal with superpowerful laser radiation. Presented here are the complete tensor sets of elastic constants and photoelastic coefficients of LiNbO₃ and LiNbO₃:MgO crystals that may be used for a geometry optimization of acousto-optical interaction providing the best diffraction efficiency of acousto-optical cells made of these materials.</p>
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